

DI  
521  
39

# THE *Chemist*

GENERAL LIBRARY

OCT 7 1946

UNIVERSITY OF GEORGIA

SEPTEMBER, 1946



VOLUME XXIII, No. 9

|                              |     |
|------------------------------|-----|
| Atomic Energy Act .....      | 341 |
| Your Story in Pictures ..... | 351 |
| Council .....                | 359 |
| Chapters .....               | 359 |
| For Your Library .....       | 364 |
| Chemical Condensates .....   | 368 |

## OBJECTIVES OF THE AMERICAN INSTITUTE of CHEMISTS

- (1) *To provide and enforce a code of principles of professional conduct which merits public esteem and justifies confidence in the integrity of the Chemist;*
- (2) *To establish and maintain a standard of proficiency of such excellence as to insure competent and efficient service;*
- (3) *To secure an adequate basic training for the profession and admit to fellowship in the Institute only those of proved education, experience, competency and character.*
- (4) *To strive to enhance the prestige and distinction of the profession and to extend its influence and usefulness;*
- (5) *To establish and maintain a register of membership in which there shall be a complete record of the training, experience and fitness for service of each member;*
- (6) *To seek to improve the economic status of the profession by cooperating with employers to secure a satisfactory appreciation and evaluation of the services of the chemist;*
- (7) *To provide a means for the appropriate recognition of distinguished service rendered by individual members of the profession;*
- (8) *To cooperate with all agencies serving chemistry to make the profession of chemistry a powerful factor in the advancement of intellectual and material progress in the United States to the end that this nation shall assume its rightful place as a leader among the nations of the world in scientific thought and accomplishment;*
- (9) *To lend support to the work of the chemical societies in the education of the public to a better appreciation of the contribution of the chemist to world progress;*
- (10) *To render such other services to the profession as developments shall warrant and which The American Institute of Chemists shall approve.*

# "Baker's Analyzed" C.P. Pellets



Easier to weigh . . . More convenient  
and economical to handle . . . Actual  
analysis on every label, which costs us  
more to make, but costs you less to use.

Available at your favorite Laboratory Supply House.

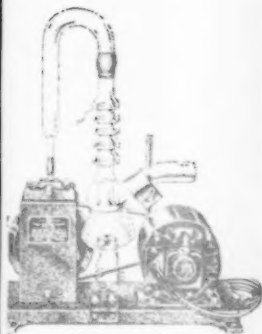
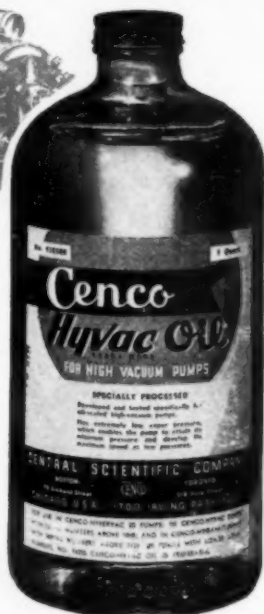
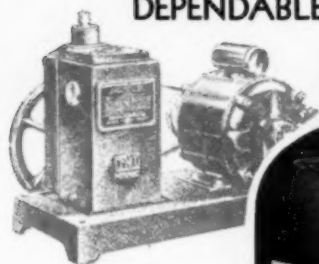
J. T. Baker Chemical Co., Executive Offices and Plant: Phillipsburg, N. J.  
Branch Offices: New York, Philadelphia, Boston and Chicago.

**"Baker's Analyzed"**  
C. P. CHEMICALS AND ACIDS



Purity defined — not to  
"maximum limits" —  
but to the decimal by ac-  
tual laboratory analysis. That's  
the story of the Baker's  
Analyzed label.

## DEPENDABLE FOR HIGH VACUUM PUMPS



**Specially Processed  
For High Vacuum**

**New Cenco Hyvac Oil** is especially processed to assure maximum vacuum pumping speed at low pressures when using Cenco and other mechanical vacuum pumps. It is the result of exhaustive tests made in the Cenco laboratories on the physical properties of a wide variety of vacuum-pump oils. Data taken from these tests show an increase in pumping speed of more than 10% over that obtained from the former Cenco Hyvac Oil, and as much as 35% over that obtained from other oils offered for vacuum pump use.

Obtain maximum pumping speed at low pressures in your newer models of Cenco Hypervac-20, Cenco Megavac, Cenco Hyvac, and other vacuum pumps by specifying the new Cenco Hyvac Oil.

No. 93050B Cenco Hyvac Oil in quart glass bottles...each \$ .50

No. 93050C Cenco Hyvac Oil in gallon cans.....each 1.60

## CENTRAL SCIENTIFIC COMPANY

SCIENTIFIC INSTRUMENTS  LABORATORY APPARATUS

NEW YORK TORONTO CHICAGO BOSTON SAN FRANCISCO

# *The Chemist*

*Publication of*

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd Street, New York 17, N. Y.

Volume XXIII

September, 1946

Number 9

*Editor:* V. F. KIMBALL

*Managing Editor:* T. S. MCCARTHY

## **Editorial Advisory Board**

WALTER J. MURPHY

HILTON IRA JONES

HOWARD S. NEIMAN

## **Contributing Editors**

R. K. Carleton, Rhode Island State College, Kingston, Rhode Island.

Leo M. Christensen, The University of Nebraska, Lincoln, Nebraska.

T. K. Cleveland, Philadelphia Quartz Company, Berkeley, California.

George H. Coleman, The State University of Iowa, Iowa City, Iowa.

Ralph T. K. Cornwell, Sylvania Industrial Corporation, Fredericksburg, Virginia.

J. B. Ficklen, Health Department, C. L. A. 808 No. Spring St., Los Angeles 12, Calif.

J. H. Jenson, Northern State Teachers College, Aberdeen, South Dakota.

Louise Kelley, Goucher College, Baltimore, Maryland.

Stewart J. Lloyd, University of Alabama, University, Alabama.

Simon Mendelsohn, 608 E. Epworth, Winton Place, Cincinnati, Ohio.

William B. O'Brien, The Dodge Chemical Company, Boston, Massachusetts.

Harry S. Owens, Western Regional Research Laboratory, Albany, California.

W. B. Parks, 105 West Potlitzer, Pittsburg, Kansas.

J. M. Purdy, The Lowe Brothers Company, Dayton, Ohio.

Ashley Robey, 421 College Avenue, Salem, Virginia.

Milton O. Schur, Ecusta Paper Corporation, Pisgah Forest, North Carolina.

Kenneth E. Shull, 23 Bala Avenue, Bala Cynwyd, Pennsylvania.

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in *THE CHEMIST*.

Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N. Y. Subscription price, \$2.00 a year. Single copy, this issue \$0.25. Copyright 1946, by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

# Announcing— the 1946 Merck Laboratory Chemicals Catalog

**NOW AVAILABLE UPON REQUEST**



Chemists in every field will be interested in these features of the 1946 edition of the Merck Laboratory Chemicals Catalog:

- *A list of Merck Laboratory Chemicals — used in every branch of industry, education, and research.*
- *Maximum impurities of Merck Reagent Chemicals, including those which conform to ACS specifications.*
- *Proper Storage of Fine Chemicals.*
- *Molecular and Atomic Weights.*
- *Comprehensive listing of Micro-analytical Chemicals, Amino Acids, and Vitamins.*
- *Conversion ratios.*
- *Chemical formulas.*

Write today for your personal copy of this useful, informative catalog.

Merck & Co., Inc.  
Manufacturing Chemists  
Rahway, N. J.

Please send me a copy of the 1946  
Merck Laboratory Chemicals Catalog.

Name .....  
(Please indicate title, if any)

Company or Organization .....

Street .....

City..... State.....

**MERCK  
LABORATORY CHEMICALS**

MERCK & CO., Inc., RAHWAY, N. J.

*Manufacturing Chemists*



The im  
of a mat  
ance thr  
weights

the Fisher  
with

FISHE

717 Fort  
2109 Le

## FISHER-GARDNER MOBILOMETERS

for  
Testing:

Paints  
Greases  
Lacquers  
Dairy Creams  
Mineral Oils  
Vegetable Oils  
Ice Cream Mixes  
Syrups  
Gelatins  
Glues  
Light Tars  
Pitches  
Soap Solutions  
Food Products  
Etc., Etc.



The improved Fisher-Gardner Mobilometer enables the determination of the mobility of a material by observing the time required for a standard disc to descend a fixed distance through the sample. By means of three interchangeable discs and a choice of weights for use on the plunger, the Mobilometer has a very wide range of application.

The improved model employs monel metal instead of brass and has a new, convenient releasing mechanism.

The Improved Fisher-Gardner Mobilometer has a monel metal water jacket which enables the laboratorian to control the temperature of the sample within close limits and thus insures more reproducible results. The water jacket, by providing means for raising the temperature of the sample, increases the range of the apparatus to fluid and semi-fluid greases as well as other viscous products.

The Fisher-Gardner Mobilometer is furnished complete with 4-hole, 51-hole and solid discs, spirit level, removable sample cylinder and water jacket. The monel metal discs, cylinder, jacket and plunger are readily detached for cleaning. The base has leveling feet.

Each, \$70.00

(When the high degree of accuracy and wide range of application provided by the complete Mobilometer are not required, the Mobilometer without water jacket can be employed. It can be had for \$58.00.)



The Fisher-Gardner Mobilometer  
with water jacket.

Many American industries control the consistency of their products by means of the Fisher-Gardner Mobilometer.

Manufacturers—Distributors

**FISHER SCIENTIFIC CO.**

717 Forbes St., Pittsburgh (19), Pa.  
2109 Locust St., St. Louis (3), Mo.



**EIMER AND AMEND**

Greenwich and Morton Streets  
New York (14), New York

Headquarters for Laboratory Supplies

Chemical of the month...

# Phenetole

*from the Dow "library" of Special Chemicals*

Phenetole, available from Dow, may be the clue to some of your chemical problems. This compound has a number of uses as an intermediate in chemical synthesis... may also prove of value as a solvent. What possibilities does it hold for you?

Look over Phenetole's properties below, then consult the Dow technicians about its application to your particular requirements. Dow will be glad to supply samples at your request on your company letterhead.

**Phenetole**  $C_6H_5 \cdot O \cdot C_2H_5 = 122.2$

**PROPERTIES:** Colorless, refractive liquid with a pleasant characteristic odor.

Boiling range at 760 mm. Hg, 5-95%.....169-171°C.

Specific gravity at 25/25°C.....0.964

Freezing point.....<-20°C.

Refractive index at 25°C.....1.508

Flash point.....63°C.

Fire point.....63°C.

Viscosity at 25°C., centipoises.....1.1

Viscosity at 60°C., centipoises.....0.6

**SOLUBILITY:** Miscible with the common organic

solvents, insoluble in water.

**THE DOW CHEMICAL COMPANY • MIDLAND, MICH.**

New York • Boston • Philadelphia • Washington • Cleveland • Detroit  
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle





Portable

# LUMETRON

PHOTOELECTRIC COLORIMETER

SERIES  
400

- Portable
- Rugged
- Low priced
- Easy to use
- Accurate
- Dependable
- Versatile



*for Routine and Research:*

- Clinical Tests
- pH Measurements
- General Colorimetric Analysis
- Metallurgical Analysis
- Turbidity Measurements

2421/9—Lumetron Photoelectric Colorimeter Model 400-A. With external voltage stabilizer, six color filters and twelve carefully selected and matched tubes. For 110 volt, 60 cycle, A.C. current.....\$130.00

2421/10—Same as 2421/9, but with voltage stabilizer mounted in a wooden carrying case for easy portability.....\$136.00

2421/8—Same as 2421/9, but without stabilizer; for use where voltage fluctuations are at a minimum.....\$112.00

Series 400 models for operation from DC lines or from storage batteries are also available. For vitamin analysis, ultra-violet absorption, fluorescence measurements and general colorimetric or turbidimetric analysis requiring highest accuracy, ask about Lumetron series 402E and 402EF.

Prices Subject to Change

Write today for your copy

CATALOG 44  
PART ONE



## SCHAAR & COMPANY

Complete Laboratory Equipment

754 W. LEXINGTON AVE.

CHICAGO 7, ILL.





## ALL THIS... and quiet, too!

The modern kitchen equipment now becoming available is a delight to the eye, no doubt about that. It's a delight to the ear, too, for "tinny" sounds from usual kitchen operations are reduced to a minimum through the use of "Witco vibration dampeners"—scientifically compounded asphalt compositions which are readily sprayed on the under surface of steel utility cabinets, dish washers, sinks, window ventilators and ventilating ducts.

Witco Research Laboratories have developed several grades of vibration dampeners to deaden sound, seal seams and give thermal insulation with protection against corrosion. These are also widely used in the manufacture of automobile doors, body panels and fenders, railway cars, office furniture, steel cabinets, portable steel partitions, air conditioning units

and in many sheet steel products subject to mechanical vibration. From the manufacturing viewpoint, ease of spray application and improvement in cleanliness are advantages that promote their use on high-speed production lines.

Here, then, is yet another example of Witco's contributions to industrial progress in such fields as steel fabrication, rubber compounding, paper and ink-making, plastics, paints, cosmetics and drugs, ceramics and leather.

• • •

WITCO CHEMICAL COMPANY, 295 Madison Avenue, New York 17, N. Y.; Boston; Chicago; Detroit; Cleveland; Akron; San Francisco; Los Angeles.... London and Manchester, England

**WITCO CHEMICAL**  
MANUFACTURERS AND



**COMPANY**  
EXPORTERS

# Atomic Energy Act

The McMahon Atomic Energy Control Bill (S.1717) was passed by Congress on August first. The provisions of this Atomic Energy Act of 1946 are of such interest to chemists that the following analysis of it, prepared by the Patents and Research Committee of the National Association of Manufacturers, is reprinted here. A complete copy of the Act may be obtained on request from your Congressman.

S. 1717, which has been enacted into law as the "Atomic Energy Act of 1946" (Public Law 585—79th Congress), has as its declared policy that "the development and the utilization of atomic energy shall, so far as practicable, be directed toward improving the public welfare, increasing the standard of living, strengthening free competition in private enterprise, and promoting world peace."

To effectuate these policies, the purposes of the act include a program of fostering private research and development "to encourage maximum scientific progress;" together with a program "for the control of

scientific and technical information which will permit the dissemination of such information to encourage scientific progress...;" a program of Federally-conducted research and development, and a program "for Government control of the production, ownership, and use of fissionable material to assure the common defense and security and to insure the broadest possible exploitation of the fields."

## Commission

To administer this program the act creates an Atomic Energy Commission of five members to be appointed by the President with the advice and consent of the Senate. The commission is to contain four divisions comprising research, production, engineering and military application. The later is to have as director a member of the armed forces. The commission is to have the benefit of the advice of a General Advisory Board of nine members who would advise on scientific and technical matters relating to materials, production, and research and development.

In addition, there is to be a Military Liaison Committee consisting of representatives of the War and Navy Departments which is to be kept

fully informed by the commission of all such matters before it and the committee is to keep the commission equally informed of all atomic energy activities of the War and Navy Departments. Should the committee at any time conclude "that any action, proposed action, or failure to act... is adverse to the responsibilities of the Departments of War or Navy... the committee may refer such action, proposed action, or failure to act to the Secretaries of War and Navy. If either Secretary concurs, he may refer the matter to the President whose decision shall be final."

### Research

The commission is authorized to assure continued research through its own facilities and by grants-in-aid to private and public institutions.

### WHAT IS CONTROLLED

The control of the commission in the atomic energy field is all-inclusive and embraces:

1—*Source material*, which means "uranium, thorium, or any other material which is determined by the commission, with the approval of the President, to be peculiarly essential to the production of fissionable materials; but includes ores only if they contain one or more of the foregoing materials in such concentration as the commission may by regulation determine from time to time."

2—*Fissionable material*, which means "plutonium, uranium enriched in the isotope 235, any other ma-

terial which the commission determines to be capable of releasing substantial quantities of energy through nuclear chain reaction of the material, or any material artificially enriched by any of the foregoing; but does not include source materials, as defined in section 5 (b) (1)."

3—*By-product material*, which means "any radioactive material (except fissionable material) yielded in or made radioactive by exposure to the radiation incident to the processes of producing or utilizing fissionable material."

4—*Facilities for the production of fissionable material*, which means "any equipment or device capable of such production and any important component part especially designed for such equipment or devices, as determined by the commission."

5—*Utilization of atomic energy*. "The term atomic energy means all forms of energy released in the course of, or as a result of, nuclear fission or nuclear transformation."

### HOW CONTROL IS EXERCISED

1—*Source materials*. Unless authorized by a license issued by the commission, no person may transfer or deliver or receive possession of any source material after removal from its place of deposit in nature. Licenses, however, are not required for quantities of source material which "in the opinion of the commission are unimportant."

The commission is to establish such

standards for the issuance, refusal or revocation of licenses as it may deem necessary "to assure adequate source materials for production, research, or development activities . . . or to prevent the use of such materials in a manner inconsistent with the national welfare."

The commission, furthermore, may issue regulations requiring reports of ownership, possession, extraction, refining, shipment, or other handling of source materials. However, the act specifically excepts from such requirement reports with respect to any source material prior to its removal from its place of deposit in nature or "quantities of source materials which in the opinion of the commission are not important or the reporting of which will discourage independent prospecting for new deposits."

#### Acquisition of Source Materials

*Acquisition* — The commission is further authorized to purchase, requisition, condemn or otherwise acquire supplies of source materials or any interest in real property containing deposits of source materials "to the extent that it deems necessary to effectuate the provisions of this act." Just compensation is to be paid for any property thus taken. In addition, the commission is authorized to conduct and enter into contracts for the conduct of exploratory operations, investigations and inspections to determine the location, condition, etc., of deposits or supplies of source materi-

als. Such exploratory operations may be conducted only with the consent of the owner, but such investigations and inspections may be conducted with or without such consent.

*2—Fissionable material.* All fissionable material within the jurisdiction of the United States already produced or hereafter produced is to become the property of the commission, and while the commission may authorize a person to retain possession of fissionable material, no person is to have any title in or to fissionable material.

Furthermore, no person may export or import fissionable material into the United States nor directly or indirectly engage in the production of fissionable material outside of the United States.

The commission is authorized to distribute fissionable material for the conduct of research or development activities for use in medical therapy, or for use pursuant to a license issued under the authority of section 7 which will be discussed subsequently. The commission is directed to distribute sufficient fissionable material to permit the conduct of widespread independent research and development activity to the maximum extent practicable but no applicant is to receive enough material to construct a bomb or other military weapon.

#### Production of Material

*3—Production of fissionable material.* It is unlawful for any person

to own any facilities for the production of fissionable material, or for any person to produce fissionable material except as provided in Section 4. This section makes the commission the exclusive owner of all facilities for the production of fissionable material other than facilities which are useful in the conduct of research and development activities relating to (a) nuclear processes, (b) the theory and production of atomic energy, (c) the utilization of fissionable and radioactive materials for medical, biological, health or military purposes, and (d) the utilization of such materials and processes entailed in the production of such materials for "all purposes including industrial uses."

Another exception are facilities which do not in the opinion of the commission have a final production rate adequate to enable the operator of such facilities to produce within a reasonable period of time a sufficient quantity of fissionable material to produce an atomic bomb or any other atomic weapon.

With respect to the operation of the commission's production facilities, the commission may enter into research and development contracts authorizing the contractor to produce fissionable materials in the commission's facilities to the extent that the production of such fissionable material may be incident to the conduct of research and development activities under such contracts. When such con-

tracts are entered into, the contractor may not subcontract any part of the work except as authorized by the commission and must render such reports as the commission requires. In addition he must submit to frequent inspections by employees of the commission of all his activities in the plant.

### Licenses Required

4—Unless authorized by license issued by the commission, no person may manufacture, produce, transfer or acquire any *facilities for the production of fissionable material*. Licenses are to be issued in accordance with the regulations that the commission may establish but no license is to be required for the manufacture, production, transfer or acquisition of production facilities incident to or for the conduct of research or development activities of the types previously mentioned or to prohibit the commission to manufacture or produce such facilities for its own use.

5 — *By-product materials*. The commission is to distribute, with or without charge, by-product materials to applicants seeking such materials for research or development activities, medical therapy, industrial uses, etc. Preference is to be given to those who desire to use the material in the conduct of research and development activity or medical therapy.

6—*Military application of atomic energy*. The commission is authorized to conduct experiments and do research in the military application of

## ATOMIC ENERGY ACT

atomic energy, and no person may manufacture, produce, transfer, or acquire any equipment or device utilizing fissionable material or atomic energy as a military weapon except as may be authorized by the commission.

### Utilization of Atomic Energy

#### 7—Utilization of atomic energy.

No person may manufacture, produce or export any equipment or device utilizing fissionable material or atomic energy or utilize fissionable material or atomic energy, with or without such equipment or device, except under and in accordance with a license issued by the commission. Furthermore, no license may permit any such activity if fissionable material is produced incident to such activity except as it is incident to research or results from contract operations in the commission's own production facilities. The act in this section (7) stresses that no license is required for the conduct of research or development activities relating to the manufacture of such equipment or devices for the utilization of fissionable material or atomic energy, or for the manufacture or use of equipment or devices for medical therapy.

The term "equipment or device utilizing fissionable material or atomic energy" means "any equipment or device capable of making use of fissionable material or peculiarly adapted for making use of atomic energy and any important component part

especially designed for such equipment or devices, as determined by the commission."

The licenses that are thus required for the utilization of atomic energy are to be based upon a report to Congress by the commission which is to report whenever, in its opinion, any industrial, commercial or non-military use of fissionable material or atomic energy has been sufficiently developed to be of practical value. In its report the commission is to give its estimate of the social, political, economic, and international effects of such use and its recommendations for necessary or desirable supplemental legislation.

### Issuance of Licenses

No license for any manufacture, production, export or use may be issued by the commission until after the report has been filed with Congress and a period of 90 days during which Congress was in session has elapsed after the report has been thus filed. Thereafter, the commission may license such manufacture, production, export or use in accordance with the procedures that may establish.

It is authorized and directed to issue licenses on a non-exclusive basis and to supply to the extent available appropriate quantities of fissionable material to licensees "(1) whose proposed activities will serve some useful purpose proportionate to the quantities of fissionable material to be



consumed; (2) who are equipped to observe such safety standards to protect health and to minimize danger from explosion or other hazard to life or property as the commission may establish; and (3) who agree to make available to the commission such technical information and data concerning their activities pursuant to such licenses as the commission may determine necessary to encourage similar activities by as many licensees as possible.

#### Licenses May Be Revocable

"Each such license shall be issued for a specified period, shall be revocable at any time by the commission in accordance with such procedures as the commission may establish, and may be renewed upon the expiration of such period. Where activities under any license might serve to maintain or to foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of new, freely competitive enterprises in the field, the commission is authorized and directed to refuse to issue such license or to establish such conditions to prevent these results as the commission, in consultation with the Attorney General, may determine.

"The commission shall report promptly to the Attorney General any information it may have with respect to any utilization of fissionable material or atomic energy which appears to have these results. No li-

cense may be given to any person for activities which are not under or within the jurisdiction of the United States, to any foreign government, or to any person within the United States if, in the opinion of the commission, the issuance of a license to such person would be inimical to the common defense and security."

8—*By-product power.* If energy which may be utilized is produced in the production of fissionable material, such energy may be used by the commission, transferred to other Government agencies, or sold to public or private utilities under contracts providing for reasonable resale prices.

9—*Information.* The commission is to control the dissemination of restricted data in such a manner as to assure the common defense and security.

#### PATENTS AND INVENTIONS

Section 11 provides that inventions and discoveries in the following classes shall not be the subject matter of patents:

1—The production of fissionable material;

2—The utilization of fissionable material or atomic energy for a military weapon;

3—Inventions to the extent used in the conduct of research or development activities in the fields specified in Section 3 of the bill.

With respect to each of the foregoing, any patent that has already been granted is revoked in whole or



in part, that is to the extent that any such invention or discovery is so used or usable in those fields; and just compensation to the patent owner shall be made therefor. In the future, no patent shall be granted in those fields.

### Report of Invention Required

In classes 1 and 2 above specified, the inventor where the invention has not already been patented "shall file with the commission a report containing a complete description thereof, unless such invention or discovery is described in an application for a patent filed in the Patent Office by such person within the time required for the filing of such report. The report covering any such invention or discovery shall be filed on or before whichever of the following is the latest: (a) The sixtieth day after the date of enactment of this act; (b) the sixtieth day after the completion of such invention or discovery; or (c) the sixtieth day after such person first discovers or first has reason to believe that such invention or discovery is useful in such production or utilization."

No penalty is provided for failure to file such report but provision is made whereby the inventor, who has complied with this provision, may make application to the commission for an "award" for his invention.

As to inventions in Class 3 above, the act provides in subsection (b) that "no patent hereafter granted

shall confer any rights with respect to any invention or discovery to the extent that such invention or discovery is used in the conduct of research or development activities in the fields specified in Section 3. Any rights conferred by any patent heretofore granted for any invention or discovery are hereby revoked to the extent that such invention or discovery is so used, and just compensation shall be made therefor." The fields specified in Section 3 are:

- (a) Nuclear processes;
  - (b) The theory of production of atomic energy including processes, materials and devices related to such production;
  - (c) Utilization of fissionable and radioactive materials for medical, biological, health or military purposes or utilization of fissionable or radioactive materials and process entailed in the production of such material for all other purposes, including industrial uses; and
  - (d) The protection of health during research and production activities.
- The inventor cannot receive patents covering such fields of use of his inventions in research and development—not even an "award" is provided for him.

### Just Compensation Allowed

Where patents are revoked in Classes 1, 2 and 3 above mentioned, provision is made for just compensation to be determined by a Patent Compensation Board "consisting of

two or more employees of the commission," with provision that if the compensation offered is not satisfactory to the patent owner, he may be paid in the amount of 50 per cent and he may file a claim in the Court of Claims for the remainder (Section 13). With respect to the award that may be made for inventions in Classes 1 and 2, the inventor may file his claim for an award and if not satisfied therewith may appeal to the Court of Claims of the District of Columbia. The court's judgment shall be final, subject, however, to review by the Supreme Court of the United States by writ certiorari or on petition therefor under Section 240 of the Judiciary Court by the commission or any party to the court proceeding.

#### **Patents Subject to Compulsory Licensing**

Section 11 also provides that it shall be the duty of the commission to declare any patent to be affected with the public interest and subject to compulsory licensing if:

"(a) the invention or discovery covered by the patent, utilizes or is essential to the utilization of fissionable material or atomic energy; and

"(b) the licensing of such invention or discovery under this subsection is necessary to effectuate the policy and purposes of this act."

The purposes and policy referred to in (b) are set forth in Section 1 in very broad terms, namely:

- 1—Assisting private research;
- 2—Free dissemination of basic scientific information;
- 3—Establishing a program of Government-conducted research;
- 4—Government control of production, ownership and use of fissionable materials; and
- 5—Establishing a program of administration consistent with such international arrangements which may be made by the United States.

Specifically, Section 11 provides that the commission is licensed to use the invention or discovery covered by such patent in performing any of its powers under the act; and also that any person to whom a license has been issued under Section 7 is automatically licensed to use the invention or discovery to the extent that such invention or discovery is used by him in carrying on the activities authorized by his license under Section 7. "The owner of the patent shall be entitled to a reasonable royalty fee for any use of an invention or discovery licensed by this subsection. Such royalty fee may be agreed upon by such owner and the licensee, or in the absence of such agreement shall be determined by the commission."

Section 7, exclusive of research and development activities which are provided for in Sections 3 and 4, provides for the commission to grant applicants a license "to manufacture any equipment or device utilizing fis-

## ATOMIC ENERGY ACT

sionable material or atomic energy or to utilize fissionable materials or atomic energy with or without such equipment or device." This covers apparently licensing for all industrial uses of fissionable material.

More especially the determination of a royalty under such compulsory licensing is to be made by the Patent Compensation Board and, if the patent owner is not satisfied with the royalty fee provided for by the board, he may obtain a review of such determination in the Court of Appeals in the District of Columbia as above provided with respect to an award in non-patented inventions in Classes 1 and 2 above.

### GENERAL

#### Judicial Review and Administrative Procedure

The Administrative Procedures Act is specifically made applicable to the activities of the commission.

#### Joint Committee on Atomic Energy

A joint committee to be composed of nine members of the Senate and nine members of the House is to be appointed by the President for the purpose of making continuing studies of the activities of the Atomic Energy Commission, and of the problems relating to the development, use and control of atomic energy. All bills, resolutions and other matters in either house relating primarily to the commission or to the development, use

or control of atomic energy are to be referred to the joint committee.

#### FBI Investigations

No person is to undertake research activities or receive a license for the use or manufacture of fissionable materials or the use or manufacture of devices, etc., or act as contractor utilizing the commission's facilities unless he agrees in writing not to permit any individual to have access to restricted data until the FBI shall have investigated the individual.



#### Evans Awarded Honorary Scroll

Dr. Ward Vinton Evans will receive the 1946 Honorary Scroll Award of the Chicago Chapter of The American Institute of Chemists at a dinner meeting to be held on October 4th in Chicago. Dr. Franklyn B. Snyder will speak on "Ward Evans—My Friend and Colleague"; Dr. Gustav Egloff, F.A.I.C., will discuss "Ward Evans—Teacher, Scientist and Citizen"; and the presentation of the Honorary Scroll will be made by Dr. C. A. Johnson, F.A.I.C.

Professor Evans is being honored for his outstanding achievements in the field of chemistry as a great teacher, as an industrial consultant and for his high civic spirit. Professor Evans retired from Northwestern University as chairman of the Chemistry Department, having served on the faculty since 1916. For the

past year he has been associated with the Army University in Europe. During World War I he served as an expert for the United States Bureau of Mines in the testing of high explosives.

Past recipients of the Honorary Scroll include Professor V. N. Ipatieff, F.A.I.C., of Universal Oil Products Company; Dr. F. C. Koch, F.A.I.C., of Armour and Company; the late Dr. R. B. Harper, F.A.I.C., of the Peoples Gas Light and Coke Company. and Dr. D. B. Keyes, F.A.I.C., of Heyden Chemical Company.

#### **Dow Awarded Chemical Industry Medal**

Dr. Williard H. Dow, F.A.I.C., president and chairman of the Dow Chemical Company, Midland, Michigan has been awarded the Chemical Industry Medal for 1946 of the American Section of the Society of Chemical Industry. Dr. Dow was cited for his "conspicuous service to applied chemistry". Under Dr. Dow's direction the Dow Chemical Company carried out more than 50 major wartime projects including magnesium, styrene, high octane gasoline, and chemicals required for the manufacture of munitions. The medal will be presented to Dr. Dow at a dinner of the Society of Chemical Industry to be held in New York on November 8th. Dr. Dow received the Gold Medal of THE AMERICAN INSTITUTE OF CHEMISTS in 1944.

#### **High School Science Teachers' Salaries**

Dr. Paul E. Klopsteg, chairman of The American Institute of Physics, and director of the Technological Institute of Northwestern University, maintains that high school teachers' salaries must be raised and that improvement of high school science teaching is imperative. It is at the high school level that exceptional youths should be inspired to take up science as a career, and this objective cannot be achieved by indifferent teaching. Some familiarity with science is basic to good citizenship and the proper appreciation of our modern civilization, and the high school is the place to acquire this.

Teaching standards must be raised to meet modern needs, but better teaching requires higher salaries. At the present time, there is more incentive for a young man to seek to meet the requirements to become a milkman than to train himself for a career in high school science teaching. Recent surveys have shown that the average teacher salary is about \$1500 a year, and most high school teachers receive less than \$2000. Many milkmen receive more than twice as much in wages and commissions. Teacher salaries have advanced little in recent years, while incomes in other occupations have risen. Proper training of American youth requires that teachers of high school science be paid higher salaries.

# Your Story in Pictures

**Milton F. Martin**

*Vice President of Transfilm, Inc.*

The dramatic use of industrial, color, motion pictures to give a portrait of an industry, to train industrial workers, to assist sales programs, and in education, was demonstrated at a recent meeting of the New York Chapter, A.I.C. Films shown were Calco's pictures of the dye industry and The Barrett Division's record of the utilization of nitrogen in plant life. Mr. Martin tells how industrial films are prepared.

**W**HAT you don't know can hurt you! An anonymous Chinese gentleman had this in mind when he said, "One picture is worth a thousand words."

We did not really explore the possibilities of the visual medium until, with our backs to the wall, we were faced with the necessity of converting 11,000,000 shopkeepers, clerks, and salesmen into military specialists overnight. Then we found literally hundreds of applications for the visual approach. It is generally conceded

that films played a large part in the technical skill displayed by our civilian Army and Navy. Films helped industry to train and to indoctrinate workers in war plants. The success of visual education in and out of the Armed Forces during the war is a fascinating story.

Reconversion, production, full employment, today are every bit as urgent as problems during the war. Progressive businessmen, impressed by the record of films in wartime, ask "How can we apply visual techniques on a dollar-and-cents basis in our business? How, when, and where do motion pictures, slide films, three-dimensional films and television fit in the overall training or advertising program?" We can indicate some of the advantages of visual presentations and point out some of the pitfalls in the hope that those who are concerned will apply them to their "story in pictures."

The film medium is extremely flexible, and may be adapted to practically any subject. In production, through the utilization of photographs, art work, animation, cartoons, and the whole catalog of production

# "RIGHT NEXT DOOR" Y

## Fill Your Requirements From Extensive Stocks Of **B&A Reagents and C. P. Acids**

### Located in Principal Cities

To provide direct, personalized service for laboratory chemical users everywhere, the Baker & Adamson Division of General Chemical Company has its *own* chain of regional warehouses from coast to coast. Each is a strategic supply center carrying extensive stocks of B&A Reagents, C. P. acids, and other high purity B&A chemicals for prompt delivery.

One of these B&A regional warehouses serves your territory. By taking full advantage of its facilities, you can make it the auxiliary stockroom

"right next door to your laboratory" that will eliminate your own stock control problem.

Here's how . . . advise your B&A Technical Serviceman as to your specific, month-to-month reagent requirements. This way, he can plan with you in building these local B&A stocks to furnish your needs swiftly, surely, whenever you call.

You can open the door to your B&A stockroom right now by phoning or writing the nearest B&A Sales and Technical Service Office listed below.



The free, 200-page book of B&A products is an excellent guide to the range of high-purity chemicals available from your regional B&A warehouse. It contains pertinent data on 1,000 products. If you have not yet received a copy, request one today on business letterhead.

## GENERAL CHEMICAL COMPANY **BAKER & ADAMSON DIVISION**

----- 40 RECTOR STREET, NEW YORK 6, N. Y. -----

*Sales and Technical Service Offices:* Albany\* • Atlanta • Baltimore • Birmingham\* • Boston  
Bridgeport • Buffalo\* • Charlotte\* • Chicago\* • Cleveland\* • Denver • Detroit\* • Houston  
Kansas City • Los Angeles\* • Minneapolis • New York • Philadelphia\* • Pittsburgh\* • Providence  
St. Louis\* • San Francisco\* • Seattle • Wenatchee (Wash.) • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal\* • Toronto\* • Vancouver\*

\* Complete stocks carried here.

# R YOUR LABORATORY"

ds

ory"  
stock

B&A  
spe-  
wire-  
you  
ks to  
rely,

B&A  
g or  
and  
low.

the  
ware-  
t yet

N

oston  
oston  
lence

here.



REAGENTS



FINE CHEMICALS

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882



techniques, nothing is impossible. In distribution, it may be directed at any type of audience. "Your story in pictures" therefore, is a "tailored creation"—it is geared to your needs.

The first consideration is the matter of broadly classifying your story. Is it scientific, technical, public relations, selling, advertising, training, educational, institutional?

The next point is the type of presentation. Is the subject suitable for motion picture treatment? Or is it a slide film subject? Perhaps it needs color and texture and should be presented in three-dimensional photography. There is no formula which may be quickly applied, but here are a few instances in which films can be used to excellent advantage:

1. Demonstration incapable of local performance.
2. Explanations of abstract principles or phenomena.
3. Demonstration of enclosed or invisible processes.
4. Function and operation of equipment.
5. Presentation of hypothetical experiences or events.
6. Illustrating events or processes which occur in sequence but at widely scattered points.
7. Driving home safety rules and precautions through the use of object lessons.
8. Teaching sales methods and techniques.

9. Outlining organizational procedures.
10. Inspirational messages.

### Tailored Films

Having classified your story and determined the particular type of presentation that will best serve your needs, the next point for consideration is the treatment to be supplied. That depends on the selection of a qualified producer. Too often in the past the man who used "business" films used them because a competitor had found them useful. He set up a budget and asked a producer to produce. He ordered so many reels of motion pictures for so much money. He got films, some good, but most were "canned films" put through the production mill on an assembly line basis. They had about as much personality as any assembly line product.

In other instances, clients, imbued with creative zeal, have insisted on writing the script or outline themselves and generally, because of their unfamiliarity with the medium the results have been pretty sad. Too often, the glamor connected with the production of a motion picture has caused important executives to go A.W.O.L. from their desks so they could be present on the set. Details like the selection of cast, dressing of sets, direction of actors, then became subjects for discussion while production was underway. Because the producer was spending the client's money, the client got his way, and when the



finished product was screened, "Why didn't somebody tell me these things?"

Somewhere between the extremes of the client who buys film like sausage, and the one who rents the producer's facilities so he can play at making movies, is the situation in which producer and client work in harmony to extract the essence of the client's story and to treat it from a picture standpoint so the film tells the story dramatically and effectively.

The audience for a picture has to be led to the message. It has to be stirred mentally, keyed up emotionally, directed slowly and surely along a carefully plotted path until it is prepared to accept and absorb the important message. Then the value of this powerful medium goes into play. The audience feels itself doing the thing you want it to do—buying your product, liking you better, making a correct sales approach, working more efficiently. Films planned this way, directed definitely at a known audience, gave our armed forces their first battle experience while they were sitting in class-rooms. Films helped to teach them how to fly safely, to keep ships from sinking, to use highly technical equipment, to repair and maintain equipment, to shoot guns, and a multitude of other things. These films were tailored to the job, designed to give the audience the experience of actual participation in each problem, and produced to direct attention toward the message.

The difference between pre-war industrial films and the tailored films that went to work for the war effort lies in individual, careful planning of each message and the application of specialized production techniques to fit each problem. The audience must be studied as thoroughly as you would study it before making an appeal with any other medium. Analyze it in relation to where the audience is now, (what it thinks, what it does, what it will or will not like about the message), and where you want it to go. When we know where the audience is, we can start from there. We can apply logic and incentive to overcome obstacles we have discovered, lift the audience to the desired level, open the door of opportunity and lead it gently to the point where there is a sharp focus of attention on your important message. If the film has been tailored to the audience, the audiences will reach out willingly and accept the message you have given it.

### Films Must Show Results

This sounds easy. Why was it not done before the war? Because sponsors of industrial films did not ask for it. Films were bought and sold by the foot, not by results. The armed forces wanted a given number of men trained in a given time—results. That is what industry will buy from film producers in the future.

One type of film, a sound slide film done entirely with art work, is

an outgrowth of the war, since it was to war training that the highly stylized, semi-cartoon treatment, simplified to direct attention at single important points, was first applied. Trainees for war are unsympathetic audiences to reach at first, because the subject is entirely unfamiliar to them. They are not accustomed to war, the material of war, or the territory in which wars are fought. They had to be convinced of the need for absorbing the message. Interesting characterization helped. Simplified art techniques that emphasized each point helped. Humor was especially important, because the subject matter was negative or of an unpleasant nature. Experience proved that if you showed the audience the wrong way to do a job, half the audience would do it wrong. But if humor were applied and the cartoon treatment made fun of the wrong way, the point was driven home. With tailored films, frame by frame, point by point, the audiences learned the why's and how's quickly and thoroughly.

The art slide film was just one type that did this job. There were photographic slide films, sound and silent, and every type of motion picture. But the films that did so big a job were all tailored films.

Having selected a producer, it is important that you work closely with him. You know your story. He knows how to tell it in pictures. Give him all the background and ammuni-

tion he needs, but don't tell him how he should use it.

The first stage of actual production is the preparation of the picture plan, or outline treatment. The client should discuss with the producer the content, scope, length, method of treatment, and objectives. The producer's research and writing staff then goes to work on the picture plan. It should outline proposed remarks, dialogue, suggested scenes or illustrations, sound, etc. To obviate later misunderstandings, the picture plan should be reviewed by the client and cleared for the next stage.

Then a scenario must be prepared. The research and writing staff undertake the script. This is where imagination, creative ability, and production experience come into the picture. Decisions must be made as to the illustration of each point. Narration, live sound, supporting music, animation must be carefully layed out. Again the client should carefully review the scenario before the picture goes into the photographic stage. The quality and content of the picture is pegged at this point. The thoroughness of research and planning helps determine the caliber of the picture on the screen.

The third stage is the actual shooting (or art work in the case of animation or cartoon slide films). In the instance of motion pictures, to make the most convincing interpretation of the scenario, about four times

the required footage of film is shot to enable careful selection of the best "takes". The picture is now ready for the editorial stage. This involves the selection of the best "takes" for inclusion in the completed picture; the trimming of scenes to give the illustration of continuing action, and the synchronization of any natural sound. Then music and narration and offstage sound is recorded for the edited film. The client should be available during the editing of the picture.

The work prints now go to the laboratory where the sound and picture negatives are matched up and any special effects, such as dissolves, wipes, or fades are made. The first answer print is then printed and developed. This is the last chance the client has to call for further changes, and if the client has been diligently following previous stages of production, little or no change should be necessary.

The final stage is distribution. Prints are made and sent out through the desired distribution channels.

There is more to telling "Your Story in Pictures" than simply taking pictures. It is a science and a specialty, just as chemistry is a science and a special sector of industry. Research, planning, techniques, and knowledge are just as basic in the film industry as they are in the chemical industry.

### Membership In Engineer's Club of Dayton

Some interesting data were obtained in a survey to determine the percentage of members of the several technical societies in Dayton, Ohio, which hold membership in the Engineers' Club of Dayton. The results are as follows:

|  | <i>Per cent</i> |
|--|-----------------|
| The American Institute of Chemists .....         | 44.4            |
| Dayton Society of Professional Engineers .....   | 39.3            |
| American Society for Metals .....                | 28.1            |
| Society of Plastic Engineers .....               | 25.6            |
| American Society of Mechanical Engineers .....   | 23.7            |
| American Chemical Society .....                  | 20.5            |
| American Institute of Electrical Engineers ..... | 20.0            |
| American Electroplaters Society .....            | 17.5            |
| Institute of Radio Engineers .....               | 9.7             |

Interpretation of the results shows that membership in the Engineers' Club is found of interest and of value primarily by those having a well-developed sense of professional responsibility. It is worthy of note that the two organizations having the largest per cent of members who are also members of the Engineers' Club are devoted exclusively to the promotion of the professional aspects. Thus A.I.C. and D.S.P.E., the latter made up exclusively of registered or licensed engineers, lead the field.

### **Taylor Vice President of Shaw and Sons**

Dr. A. Lloyd Taylor, F.A.I.C., is vice president of H. L. Shaw and Sons, Inc., Portsmouth, New Hampshire. He is in charge of all technical operations involved in research, production, and engineering of Shaw and Sons' line of household detergents, cosmetics, and chemical specialties. From 1940 to 1946, he was director of research for Oakite products, Inc., of New York, N. Y. where he was active in professional societies, serving during 1945-1946 as chairman of the New York Chapter, A.I.C. He also served as National Councilor representing the New York Section of the American Chemical Society.

### **Cohoe Honored in London**

Dr. Wallace P. Cohoe, F.A.I.C., received the Messel Medal of the Society of Chemical Industry at the annual meeting of the Society held in London in July. The medal is awarded every two years for distinction in science or chemical literature. Dr. Cohoe's acceptance address was, "The Importance of Science in Anglo-American Relationships."



Hayden B. Kline, F.A.I.C., has been elected executive vice president and member of the executive committee of Industrial Rayon Corporation.

### **Sacramento Section, A.C.S. Approves State Registration**

"A National Board of Certification for Chemists is suggested by some rather than State Registration — on the premise that chemists are more interested in the elimination of the non-qualified than in any other reasons proposed for registration or licensing. Membership in the A.C.S. too is a measure of professional standing but recent discussion shows it is an inadequate yardstick. Unless enforced by State Registration and Licensing, a "Certified Chemist" would have little additional standing or legal recognition. Certification may give a feeling of glorification but little else. A not too far-fetched analogy may be had in the case of Certified Milk. This is the copyrighted name of a product which is supposed to meet certain standards of quality but which has no legal status unless enforced by local or state laws which authorize and define the product. The "Association of Medical Milk Commissioners, Inc." actually cannot enforce its requirements unless their product is legally recognized. The proposed Board may be a forward step but it would not be sufficient in itself. Our Section has already gone on record as favoring State Registration Acts for chemists and some states probably will soon adopt such laws. L.M.L."

—The Condensate (Bulletin of the Sacramento Section, A.C.S.)



## COUNCIL

### OFFICERS

*President*, Foster D. Snell

*Secretary*, Lloyd Van Doren

*Vice-president*, Joseph Mattiello

*Treasurer*, Frederick A. Hessel

*Honorary Secretary*, Howard S. Neiman

### COUNCILORS

STUART R. BRINKLEY

RAYMOND E. KIRK

NORMAN A. SHEPARD

GUSTAV EGLOFF

FRANK O. LUNDSTROM

W. D. TURNER

HARRY L. FISHER

DONALD PRICE

JAMES R. WITHROW

DONALD B. KEYES

JOHN H. YOE

### CHAPTER REPRESENTATIVES

#### *New York*

L. H. FLETT

#### *Niagara*

JAMES OGILVIE

#### *Pennsylvania*

J. M. McILVAIN

#### *Washington*

L. N. MARKWOOD

#### *Chicago*

MARTIN DeSIMO

#### *Miami Valley*

E. L. LUACES

#### *Baltimore*

MAURICE SIEGEL

#### *Los Angeles*

RAYMOND J. ABERNETHY

#### *Louisiana*

HAROLD A. LEVEY

#### *Northern Ohio*

M. J. BAHNSEN

#### *Western Pennsylvania*

W. H. HILL

#### *New Jersey*

H. E. RILEY

## CHAPTERS

### New Jersey

*Chairman*, G. L. Royer

*Vice-chairman*, Paul Allen, Jr.

*Secretary*, Harry Burrell

Burrell and Neidig

115 Broadway, New York 6, N. Y.

*Treasurer*, John B. Rust

*Council Representative*, H. E. Riley

The New Jersey Chapter held an annual meeting May sixth at the Newark Athletic Club, Newark, N.J. at which Dr. G. L. Royer, assistant director of physical chemical research of the Calco Chemical Division of the American Cyanamid Company, was elected chairman for the 1946-47 season.

The following officers were re-elected: Vice-chairman, Paul Allen, Jr., of Stevens Institute of Technology; Secretary, Harry Burrell of

Burrell and Neidig; and Treasurer, John B. Rust of Montclair Research Corporation. W. J. Sparks, R. W. Charlton, J. L. Brannon, Victor Chalupski, and Gordon P. Whitcomb were elected councilors.

Plans were made to hold joint meetings with the New York Chapter and with the New Jersey American Chemical Society Section during the coming year, at which subjects affecting the professional life of chemists will be discussed.

### Niagara

*Chairman*, F. L. R. Sievenpiper

*Vice-chairman*, Wallace M. Hazel

*Secretary-treasurer*, Oliver M. Morgan

64 Northledge Drive

Snyder 21, N. Y.

*Chapter Representative*, James Ogilvie

WHEREAS, We, the members of the Niagara Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, have learned with the deepest regret of the death of our fellow member and friend, Arthur W. Burwell, and,

WHEREAS, he maintained an active and sincere interest in the professional welfare of chemists, and,

WHEREAS, his wise counsel, lovable nature and kind and thoughtful qualities will ever be

remembrances of his friendliness, and,

WHEREAS, his leadership, inventiveness and accomplishments in the chemical field will ever be an inspiration to us,

THEREFORE BE IT RESOLVED, that this expression of our high regard and sincere appreciation of his outstanding qualities and of the heartfelt loss which is ours in his passing, be recorded by the secretary upon the minutes of this meeting and a copy of this resolution be forwarded to Mrs. Burwell.

## CHAPTERS

### Northern Ohio

*Chairman, H. F. Frank*

*Secretary-treasurer, M. Paul Hofmann*

*C. O. Bartlett-Snow Company*

*6200 Harvard Ave., Cleveland, Ohio*

*Chapter Representative, Monroe J. Bahnsen*

#### Annual Report 1945-46

As the present officers had served only one month at the time when nominations for the succeeding term should have been made, it was decided by INSTITUTE Headquarters to continue the present officers in office for this year.

Seven meetings have been held to date: Drs. Juredine, Schroder, Bahnsen and Waters were the speakers. Two meetings were enjoyed showing

Bakelite films and World War II films.

Our roster shows fifty-one members to date with several applications waiting for approval, an increase of twelve members to date.

The chairman wishes to express his appreciation for the excellent cooperation and work done by the officers and members.

H. F. FRANK,  
*Chairman.*

### Washington

*President, Eduard Farber*

*Vice-president, R. E. Rostenbach*

*Secretary, C. W. Whittaker*

*1705 Lanier Place, N.W., Washington, D. C.*

*Treasurer, H. I. Feinstein*

*Council Representative, Eduard Farber*

The principal feature of the meeting on April 17th at the Wardman Park Hotel was an address by Lawrence H. Flett. Mr. Flett, a member of the New York Chapter of the INSTITUTE, was heretofore unknown to most of us, but quickly won the Chapter's approbation by his understanding exposition of "Postwar Problems in Research."

The chemist, said Mr. Flett, need no longer consider himself bound to

the four walls of a laboratory in order to justify his calling. He is valuable to his company in other capacities—for example, in the sales department, in technical service and market research. The sales department carries the responsibility of directing laboratory research into profitable channels and hence outranks the scientific workers. The efficiency of research chemists, as measured by the time spent in work that leads to



ultimate production, is notoriously low—less than three per cent. The sales manager can improve this figure by eliminating fruitless items from the research program.

Mr. Flett pointed out the importance of the market research branch. This side of the house has developed a science of its own, and no company of any size operates without marketing specialists, the individuals who take much of the guess out of commercial exploitation.

The speaker called attention to the great success achieved by those who have "glamorized" the chemist. So well has this propaganda been put over, he said, that a very large number of boys in school are looking toward a profession in chemistry. The industry cannot offer a satisfactory career to all of those boys in

chemical laboratories alone. Certainly, the INSTITUTE should support no such program, and although not so stated by Mr. Flett, we should perhaps allow glamor to fall on the products of the chemist's ingenuity but maintain a discreet reserve toward the individuals responsible for them.

The Chapter has circulated to its members, to the national officers, councilors, and chapter chairmen, a "Statement of Views on Proposed National Science Legislation." The statement was sent to members of Senate Committees that held hearings on this subject. It was reported at the meeting that a number of them responded with appreciative sentiments.

The meeting was preceded by the customary dinner, at which Mr. Flett was our guest.



The A-B-C Packaging Machine Corporation has been formed to take over the business of the A-B-C Packaging Machine Company, 330 South 6th Street, Quincy, Illinois. Officers of the corporation are Morris P. Neal, president; Johan Bjorksten, F.A.I.C., vice president; Omer Rupp, vice president; Ralph Schrage, secretary and treasurer. The incorporation of the partnership was considered advisable because of the rapid growth of the organization. Dr. Bjorksten has charge of the chemical aspects of the business.

The first women students to receive graduate degrees from the Polytechnic Institute of Brooklyn, N. Y., are Patricia Bjerregaard and Anita Fischmann, both of Forest Hills, N. Y. They received the degrees of Master of Science in chemistry at the June commencement exercises.



Dr. Gustav Egloff, F.A.I.C., has been appointed a member of the Development Committee of the Western Society of Engineers.



# **Timely REINHOLD Books**

## **in CHEMICAL ENGINEERING**

### **MICROCALORIMETRY**

By **W. SWIETOSLAWSKI**

*Senior Fellow Mellon Institute, Pittsburgh, Pennsylvania*

This important book gives a detailed and comprehensive description of all methods used in measuring extremely small amounts of heat given off by various substances and processes. This information is urgently needed today because the applications of microcalorimetric measurements have been increasing steadily in recent years. These applications include determination of the heat evolved by radium and radio-active materials; by aging metallic alloys and by structural changes of metal, by hardening of cement, by plants and animals, and by various physical and physicochemical changes. Complete details on the construction of apparatus and various types of measurements are given. All physical and industrial chemists, as well as research workers in physiology, biology and related sciences will find this book extremely valuable.

208 Pages

Illustrated

\$4.75

### **THE ALKALINE-EARTH AND HEAVY-METAL SOAPS**

By **STANLEY B. ELLIOTT**

*Assistant to the President, The Ferro Chemical Corp., Subsidiary of*

*Ferro Enamel Corp., Cleveland, Ohio*

**A.C.S. Monograph No. 103**

A comprehensive, capably written treatise on metallic soaps, designed to acquaint research chemists and technologists in the petroleum, paint and lubricant industries with the properties, formulation, method of manufacture and utility of these industrially important materials. In addition to the main treatment of the subject, six appendices on patents, specifications and applications are included. Because it is the only book in English to bring all this diversified information together for ready reference, this book will be a valuable addition to technical libraries as well as an essential reference work for workers in fields which it covers.

340 Pages

Illustrated

\$7.50

### **ENCYCLOPEDIA OF CHEMICAL REACTIONS**

By **C. A. JACOBSON**

*Professor of Chemistry, West Virginia University*

**Volume I—Aluminum, Antimony, Arsenic, Barium,  
Beryllium, Bismuth, Boron, Bromine**

The first in a series of five volumes on the reactions of elements. Volume I includes 3,000 entries involving the reactions of elements aluminum, antimony, arsenic, barium, beryllium, bismuth, boron and bromine. It combines the convenience of an index with a considerable portion of the informational content of abstract and reference works. The material is alphabetically arranged first as to formulas of the reactants and next as to reagents, and contains explanatory paragraphs describing clearly and concisely the conditions governing each reaction and the nature of the product formed, equations showing progress of reaction, journal references, and other pertinent data. Indices to reagents and substances obtained are also included.

804 Pages

\$10.00

**Send Today for New Free Catalog, "Let's Look It Up"**  
**(over 200 Titles)**

## **REINHOLD PUBLISHING CORPORATION**

**330 West 42nd Street**

**New York 18, N. Y.**

*Also publishers of Chemical Engineering Catalog, Metal Industries Catalog, Materials  
& Methods (formerly Metals and Alloys), and Progressive Architecture—Pencil Points*

## For Your Library

**AN OUTLINE OF ORGANIC NITROGEN COMPOUNDS.** By Ed. F. Degering, F.A.I.C., and Collaborators. *University Lithoprinters, Ypsilanti, Mich.* 732 pp. 6¼" x 9¼". Price \$6.00.

Following a well-written chronological survey there is an excursion into the electronic concepts of valence, as applied to organic reactions based chiefly on the standard accepted forms and modified to include the concepts of relative electronegativity.

In sequence, the body of the book discusses the various classes of nitrogen compounds and has copious references. The thoroughness of the treatment is proportional to the degree of oxidation of the nitrogen, in that the nitro-compounds are extensively discussed and the quaternary ammonium compounds almost ignored.

This is an excellent volume, loaded with data, and well-worth possession by anyone whose interest even touches organic chemistry.

---

**PHYSICAL CHEMISTRY OF CELLS AND TISSUES.** By Rudolf Hober, D. I. Hitchcock, J. B. Bateman, G. B. Goddard and W. O. Ferm. *The Blakiston Company.* 676 pp. 6¼" x 9¼". Price \$9.00.

The first half of this book is devoted to the underlying field of physical chemistry, with biochemical emphasis and special treatment of large

molecules and surface phenomena.

The problem of the cell, discussed in the second half of the book, particularly the living cell, is of intense interest. The functional behavior of the surface, its existence, its permeability, its composition, the internal structure, the transference of materials and chemical changes are carefully correlated with physical variables and potentials.

In this subject we enter the portals of life, and in the cell and its functions lie the epitome of the multicellular beings, from passive and active absorption of materials to the motility and contractibility of tissues.

This book hardly touches the newer work on "tagged atoms", but it brings to date a major portion of the generalizations, and states the problems. It is a book for the physical chemist and the biochemist, well-worth having.

---

**THE NATURE OF THE CHEMICAL BOND.** By Linus Pauling. *Cornell University Press,* 451 pp. Sec. Ed. 6¼" x 9¼". Price \$4.50.

The well-publicized separation of matter into subatomic particles has caught the chemist and his confreres in a position where the relation of electron to valence must be resolved.

Professor Pauling has attempted to do this. He is like the Queen in Alice in Wonderland, who takes Alice and spins her as fast as she can

## FOR YOUR LIBRARY

to make her stay in the same place. Alice, the quivering, quaking, or shivering electron, is running and spinning to create phenomena in accord with the uncertainty principle of being in several places at once.

The work of the chemists has far exceeded that of the physicists, and the inferences drawn from chemical work are as valid as those deduced from other fields of experimentation. Professor Pauling marshalls the evidence without committing himself to any particular geometric mechanism. He allows the data to speak for themselves.

He discusses the developments of Lewis, Tolman, Rodebush, Fry, Nelson and others, classifies the types of bonds and introduces a concept of resonance, the old tautomerism extended to the atoms themselves. Inorganic as well as organic chemical phenomena are used.

Professor Pauling has opened a door which all chemists at some time must pass through. Outside this door are many barbed wire entanglements which future work will cut.

---

Kosmos Publishing Company, 133 Keizergracht, Amsterdam, Holland, has published "Weiss Magnetons as Components of Nuclear and Subnuclear Structures", and "Steroid Chains as Components of Protein and Carbon Molecules". Both are by Theodore van Schelven, and are priced at \$3.00 each.

## Fellowships for Study of Antibiotics

The Schenley Research Institute, Affiliate of Schenley Distillers Corporation and Schenley Laboratories, Inc., announces the establishment at the University of Wisconsin of a number of post-doctorate research fellowships, for the study of factors affecting the production of antibiotics and their action on human, animal and plant diseases. Fellowships will be assigned by the University and will receive salaries of \$3,600 to \$4,000 a year. The total of grants, including allowances for working expenses, will be approximately \$110,000. Though the field and scope of the program have been arranged by discussions between the University faculties and Dr. E. C. Williams, vice president and director of research of the corporation, the Fellowships are granted without conditions of any kind and will be administered under the sole discretion of the University.

---


The Department of Commerce offers a new informational service consisting of a weekly Business Service Check List of all material issued by the Department in the previous week; and a return-mail service (or collect wire or telephone service if desired) on all orders from the Check List. Written request to receive the list should be made to the Department of Commerce, Office of Information, Washington 25, D. C.

### New Classification of Scientific Knowledge Needed

Casper W. Ooms, commissioner of patents, reports that technical scientific information is not classified so that it can be utilized to the fullest extent, and it is multiplying so rapidly that it hampers the work of the Patent Office and that of scientists and inventors as well. Under "carbon compounds" alone, for example, more than 76,000 American and foreign patents are listed. He asks the nation's inventors to devise a new system of classification. Suggestions include developments of machine punch-card systems, or a universal system of nomenclature to simplify the different scientific classification systems now in use throughout the world.

Calco Chemical Division of American Cyanamid Company, Bound Brook, New Jersey, prepared an attractive booklet containing a reprint of The Declaration of Independence and the Constitution of the United States, which was distributed as a special Independence Day mailing piece to Calco's customers and employees. A limited number of these are available to readers of THE CHEMIST upon request to the company.

*The Chemical Digest*, house organ of Foster D. Snell, Inc., 305 Washington Street, Brooklyn 1, N. Y., will be sent to readers of THE CHEMIST, without charge, on request.



## SPECIAL CHEMICALS *of Assured Quality*

|                          |                               |                                 |
|--------------------------|-------------------------------|---------------------------------|
| Allantoin<br>(medicinal) | Allyl Amine<br>(intermediate) | Allyl Bromide<br>(intermediate) |
|--------------------------|-------------------------------|---------------------------------|

Potassium Thiocyanate NF and Reagent

*Write for the New Price List No. 11  
(dated August 1st) listing over 80 other chemicals.*

THE  
**EDWAL**  
LABORATORIES, INC.  
732 FEDERAL STREET, CHICAGO 5, ILLINOIS

### Scientific and Industrial Reports

The Government Printing Office issues weekly a "Bibliography of Scientific and Industrial Reports," which may be purchased from the Superintendent of Documents, Washington 25, D. C. These reports are grouped according to subject matter. The serial number, price, length, and title of each report in the bibliography are accompanied by a brief description of its contents. Information from foreign sources, as well as research sponsored by the U. S. Government, is included.

Alien Property Custodian, James E. Markham, announces that complete files of patents seized from Germany and Japan are available in the patent departments of the Chicago and Boston Public Libraries and at the Custodian's San Francisco office. Patent abstracts are still available, and should be ordered from the Office of Alien Property Custodian, National Press Building, Washington 25, D. C. Abstracts of 8000 chemical patents cost \$25.00.

Patent documents should be simplified, more concise, written in easily understandable language and stripped of much of the legal and technical verbiage that now makes many of them all but unintelligible even to the trained examiners who have to read them.

—Casper W. Ooms,  
Patent Commissioner.

### Plastics-Molding Film Available

F. J. Stokes Machine Company, Tabor Road, Philadelphia 20, Penna., will loan prints of its new, color, 16 mm. motion picture, "Robots at Work", to engineering and industrial groups. The film shows automatic molding of plastics.

"Resistance of Nickel, Monel and Other High-Nickel Alloys to Corrosion by Hydrochloric Acid, Hydrogen Chloride, and Chlorine", Technical Publication T-29 of The International Nickel Company, Inc., may be obtained on request from the editor of *Process Industries Quarterly*, International Nickel Company, Inc., 67 Wall Street, New York 5, New York.

The annual edition of the *Naturalists' Directory*, Salem, Mass. will be issued in September. It contains the names and special subjects of study of international professional and amateur naturalists. The price is \$3.00.



**ONE GALLON  
AUTOCLAVE**

Stainless Steel—  
Iron or Steel  
1000 lbs. Pressure  
Jacketed or  
Direct Fired.  
Safety valve; Ther-  
mowell; Stirrer.

—Bulletin 50—

**INDUSTRIAL MACHINERY COMPANY**  
LABORATORY MACHINERY  
Bloomfield, N. J.

## Chemical Condensates

Ed. F. Degering, F.A.I.C.

With exploratory trips to the moon still in the fantasy stage, British scientists are planning to scale the mountains and plumb the valleys of the earth's satellite by radio waves from the comfort of their laboratories. Sir Edward Appleton, secretary of the department of Scientific Industrial Research, predicted information concerning the moon's surface may be obtained by bombarding it with radio waves and recording changes as they are reflected.

New antibiotics, announced by William J. Robbins of the New York Botanical Garden include corticin, grigic acid, irpexin, obtusin, pleurin, and pleurotin.

Fifteen pounds of D.D.T. per acre is as effective against Japanese beetle larvae as 1,500 pounds of a standard arsenic-compound in the same area.

According to Joseph M. Kurung, of the New York State Hospital for Incipient Pulmonary Tuberculosis, an antibiotic, which is positive in-vitro against tuberculosis germs, has been isolated from *Aspergillus ustos*.

Vitamin Bc conjugate, isolated by chemists of Parke, Davis and Company, and synthesized by chemists of the Lederle Laboratories, is a form of antianemia vitamin.

The recently established Research Division of the Committee on Fire Prevention and Engineering Standards of the National Board of Fire Underwriters, under the directorship of M. M. Braidech, F.A.I.C., has issued Report No. 1, "Fire Hazards of the Plastics Industry". Readers of *THE CHEMIST* may obtain copies on application to the National Board of Fire Underwriters, at 85 John Street, New York, N. Y.; 222 West Adams Street, Chicago, Ill., or 1014 Merchants Exchange Building, San Francisco, California.

The Elsevier Book Company, 215 Fourth Avenue, New York, 3, N. Y., has taken over the sales agency for the Nordeman Publishing Company, Inc., publishers of scientific books, and will handle all future Nordeman book orders.

Brown Instrument Company, Accessories and Supplies Division, Philadelphia 44, Penna. issue a "Buyers' Guide on Standard Pyrometer Supplies." Readers of *THE CHEMIST* may receive this booklet without charge on request to the company.

Dr. William H. Hill, F.A.I.C. is the author of Chapter 27 of *The Chemistry of Coal Utilization*, just published by John Wiley and Sons, Inc. The chapter is entitled, "Recovery of Ammonia, Cyanogen, Pyridine and other Nitrogenous Compounds from Industrial Gases."

### Thomas Receives Medal of Merit

Charles Allen Thomas, F.A.I.C., vice president and technical director of Monsanto Chemical Company, received the Medal of Merit for his contribution to the atomic bomb project. In charge of the Clinton Laboratories since July 1945, he was credited, by Major General L. M. Groves, with completing vital research and solving production problems of extreme complexity without which the atomic bomb would not have been created. Dr. Thomas is one of ten American scientists thus honored.

Dr. Foster D. Snell, President A.I.C., spoke before members of the Michigan Fire College, Ann Arbor, June 26th; before the National Conservation Bureau, New York, N. Y., on July 2nd, and before the International Association of Fire Chiefs of Cleveland on July 23rd. His subject was "What Happens in the Burning of Plastics under Conditions Commonly Met in Fires."

Dr. Roger W. Truesdail, F.A.I.C., president and director of Truesdail Laboratories, Inc., of Los Angeles, Calif., was chosen president of the Los Angeles Rotary Club.

The Dow Chemical Company plans a \$15,000,000 expansion in its plastic production facilities.

Dr. Joseph W. E. Harrison, F.A.I.C., was presented with the honorary degree of Doctor of Science at the commencement exercises of the Philadelphia College of Pharmacy and Science. He was cited for "his service to human welfare through scientific control of the safety and quality of foods and drugs." Dr. Ivor Griffith, F.A.I.C., president of the college, presented the honor.

Dr. Gustav Egloff, F.A.I.C., of Universal Oil Products Company, lectured during August before local chapters of the Institute of Petroleum of Great Britain, in England, Scotland, and Wales. He also lectured at Oxford and Cambridge Universities, and before the Catalyst Club in London, on petroleum subjects. On August 20th, he flew to Gothenburg, Sweden, where he visited scientific and industrial research centers under the auspices of the Royal Swedish Academy of Engineering Research.

---

## Research on contract basis:

To improve present products

To create new specialties

Write for Bulletin C-32



**BJORKSTEN LABORATORIES**  
185 N. Wabash Ave., Chicago 1, Ill.

---



### Bosee Returns to Endo

Dr. Roland A. Bosee, now on terminal leave from the Navy, has returned to Endo Products, Inc., Richmond Hill, N. Y., as plant superintendent and coordinator of the work of Endo's technical departments. Prior to Navy service, Dr. Bosee was director of Endo's laboratories. During the war, he was based on a plane carrier for over two years and was involved in five major combat operations. He leaves active duty with the rank of Commander.

Columbia College, under-graduate liberal arts college for men of Columbia University, has published, "A College Program in Action" prepared by a committee on college plans and approved unanimously by the faculty. Its recommendations will be effective in September, 1947. A two-year course, covering the entire field of the natural sciences is scheduled. It is designed to develop an understanding of science as a whole and to enable the student to understand the interrelations among the sciences. This new two-year course will replace the usual requirement of two one-year courses in separate science subjects. English composition is to be made the responsibility of all instructors in an effort to improve the student's use of the language throughout the college years.

Dr. Emil Ott, F.A.I.C., director of research of Hercules Powder Company, left on August seventh for a two-months tour of England, Sweden, Switzerland, Holland, Belgium, and France, where he is visiting various chemical plants. In Switzerland, Dr. Ott is visiting his parents in Zurich. He will attend the annual meeting of the Swiss Chemical Society, and the Conference of Industrial Chemistry in Paris.

A. Watson Chapman, F.A.I.C., chemical engineer, 2329 General Pershing Street, New Orleans, La., was elected national president of Alpha Chi Sigma fraternity, at its recent convention in New Orleans. He succeeds Harold A. Gaw, chief metallurgist of American Rolling Mills Company, Middletown, Ohio, who served as president of the fraternity during the previous two-year term.

Charles W. Baulknight, F.A.I.C., formerly with the Mellon Institute, is now doing research in physical chemistry at the War Department's Frankford Arsenal, Philadelphia, Penna. He is specifically concerned with low temperature adsorption.

Captain Mark M. Luckens, F.A.I.C., has been appointed chief of the Medical Inspection Branch, Station Hospital, Fort Jackson, South Carolina.



---

**ELLIS-FOSTER COMPANY**

Established 1907

*Research and Consulting Chemists*Specializing in Synthetic Resins and their  
Plastics and Related Subjects4 Cherry Street Montclair, N. J.  
Telephone MONTclair 2-3510

---

**MOLNAR LABORATORIES***Biochemistry - New Drugs**Phenol Coefficients**Toxicity and U.S.P. Tests*

211 East 19th Street New York, N. Y.

GRamercy 5-1030

---

**RALPH L. EVANS ASSOCIATES***Research and Development*

70 Chemists and Engineers

*From Laboratory, through Pilot Plant  
to full scale Production*250 E. 43rd St. Tel. MURray Hill 3-0072  
New York 17, N. Y.

---

**Chemist Available**

Senior Chemical Engineer, F.A.I.C., seeks position as Production Manager or in Technical Sales. 17 years experience in production, process development and consulting. Constructive ability and ingenuity exemplified by long list of successfully completed projects in electrochemistry, color

**PHOENIX****CHEMICAL LABORATORY, INC.***Specialists in Petroleum Products**Chemical Tests      Physical Tests**Qualification Tests*3953 Shakespeare Avenue  
CHICAGO 47, ILL.

---

*Research***FOSTER D. SNELL, INC.**

Our chemical, bacteriological, engineering and medical staff with completely equipped laboratories are prepared to render you Every Form of Chemical Service.

*Ask for*

"The Consulting Chemist and  
Your Business"

299 Washington St. Brooklyn 1, N. Y.

---

**OAKITE****MATERIALS AND METHODS**

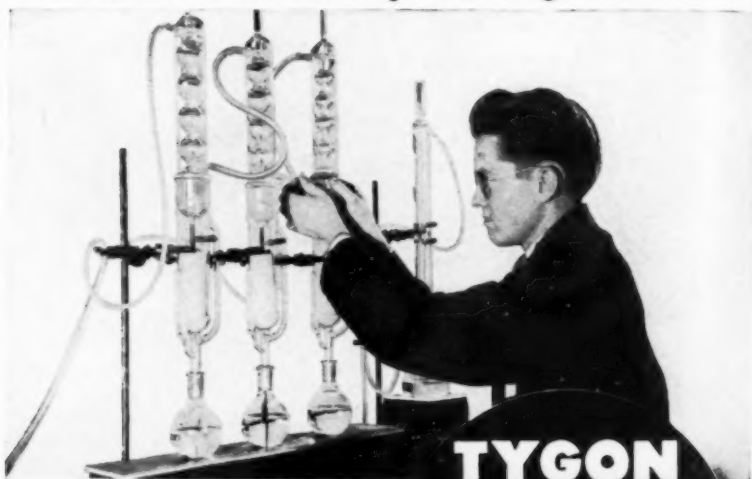
for cleaning, degreasing, sanitation, deodorizing, cutting and grinding, drawing and stamping, rust proofing, descaling and other cleaning and related operations.

**OAKITE PRODUCTS, INC.**22 Thames St. New York 6, N. Y.

---

products, cosmetics, graphite products, machinery procurement and factory installation. Available immediately for work in vicinity of New York city or in Southern California, Arizona or New Mexico. Excellent references. Personal interview solicited. Please reply to Box 90, THE CHEMIST.

## *Have you tried this Flexible* **Plastic Laboratory Tubing S22-1?**



### **WHY**

- 1** Clear, for ready visibility of solutions
- 2** Unequalled chemical resistance
- 3** Can be steam sterilized
- 4** *Flexible*, elastic, resilient
- 5** Requires no short pieces of rubber tubing to make connections
- 6** No checking or internal crazing to trap matter and contaminate following solutions
- 7** Non-toxic, odorless, tasteless, non-flammable
- 8** Smooth surface, inside and out
- 9** Does not become brittle with age

**TYGON**  
*Flexible*  
**PLASTIC  
TUBING**

Tygon Flexible Tubing S22-1 is available at most leading laboratory supply houses, or write direct to: The U. S. Stoneware Co., Akron 9, Ohio. One day's use will convince you!

**U. S. STONWARE**

*Since 1865 • Akron, Ohio*

# A LOW COST METHOD OF PROCESS COOLING

## *The Principle*

By permitting water, aqueous solutions or any volatile liquid to evaporate under high vacuum and without heat from an outside source, enough BTU can be removed to chill the liquids down to 32°F, or even lower in the case of solutions.

## *Reasons for Low Cost*

Because plain water takes the place of expensive refrigerants, evaporative cooling is much lower in cost than mechanical refrigeration. Even in some cases where conditions of industrial water supply are unfavorable this advantage prevails. Also since the equipment itself is simple and without moving parts it is economical to operate and maintain.

## *Evaporative Cooling Applications*

Chilling water for condensers, cooling rolls, absorption towers, gas coolers, drinking systems, air conditioning and other processing equipment.

Direct cooling of mother liquors in crystallizers on through a host of miscellaneous liquids as diverse as milk and whiskey mash. Cooling porous solids and wetted surfaces.

## **THE CROLL - REYNOLDS "CHILL VACTOR"**

### *An Evaporative Cooling Equipment of Advanced Design*

The CHILL-VACTOR usually consists of four major parts—the vacuum flash chamber, a single or multi-nozzle Croll-Reynolds Steam Jet Booster for producing high vacuum, a condenser suited to operating conditions, and an ejector air pump for removing non-condensables. All these elements are without moving parts—the only moving machinery being a centrifugal or other pump if required for water circulation. "CHILL-VACTORS" can operate on low pressure steam down to atmospheric with condenser water at temperatures up to as high as 95°F.

For your cooling problems we can offer many years specialized experience, and a successful record of over twenty-five years designing and building ejectors for other industrial vacuum requirements.

---

## **CROLL - REYNOLDS COMPANY**

**17 JOHN STREET**

**NEW YORK 7, N. Y.**